Claims

1. (original) A method for treating a subject having an infection caused by an Stx-producing organism by administering to the subject a therapeutically effective amount of hop bract tannin.

2. (original) The method of claim 1 further comprising administering to the subject a therapeutically effective amount of an antibiotic, the antibiotic being effective to treat an infection with the Stx-producing organism.

3. (original) The method of claim 2, wherein the antibiotic is selected from the group consisting of cefixime, tetracycline, ciprofloxacin, co-trimoxazole, norfloxacin, ofloxacin, fosfomycin and kanamycin and combinations thereof.

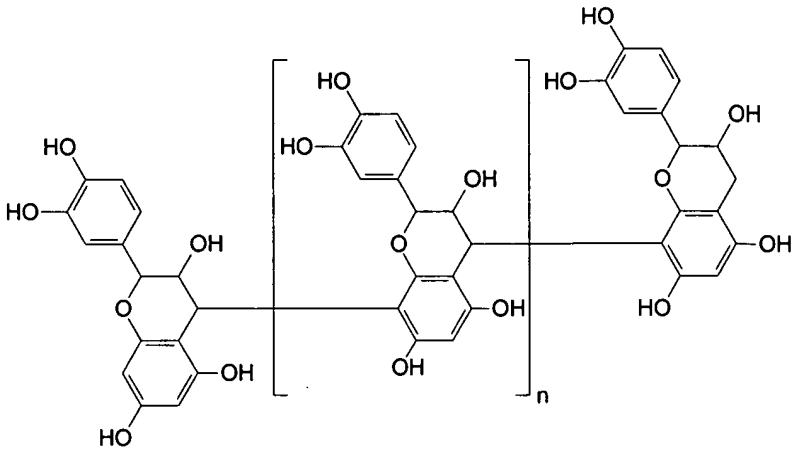
4. (original) The method of claim 1, wherein the hop bract tannin comprises a catechin polymer.

5. (original) The method of claim 4, wherein the catechin polymer comprises a polycatechin between a 10-mer and a 30-mer.

6. (original) The method of claim 1, wherein the infection is an enteric infection.

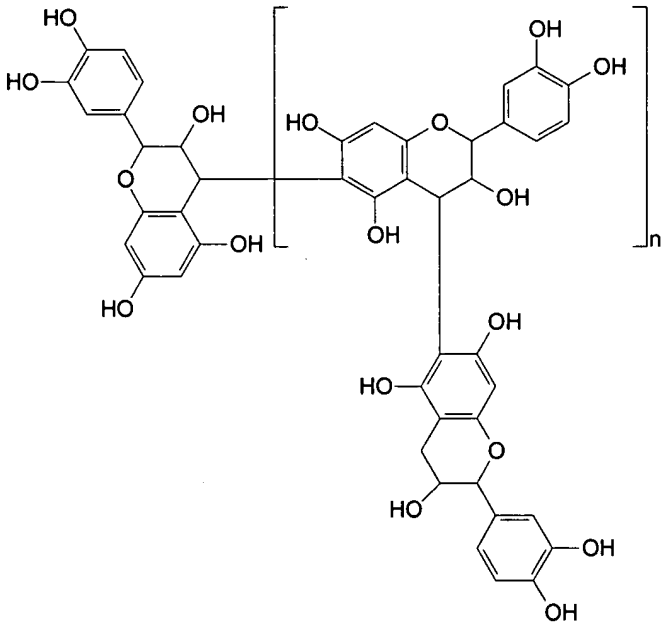
7. (original) The method of claim 6, wherein the hop bract tannin is administered enterically.

8. (original) The method of claim 5 where the polycatechin has the formula



where n=8 to 28.

9. (original) The method of claim 5 where the polycatechin has the formula



where n = 8 to 28.

10. (original) The method of claim 1, wherein the hop bract tannin comprises a fraction isolated from a hop bract extract.

11. (original) The method of claim 10, wherein the fraction has a weight-average molecular mass between 5kDa and 30 kDa.

12. (original) The method of claim 1, wherein the Stx-producing organism comprises an Stx1-producing organism.

13. (original) The method of claim 1, wherein the Stx-producing organism is a Shiga toxin-producing *Eschericia coli*.

14. (original) The method of claim 1, wherein the infection is an enteric infection, and the hop bract tannin comprises a polycatechin between a 10-mer and a 30-mer, which is administered enterically.

15. (original) The method of claim 14, wherein the infection presents clinically as severe diarrhea, hemorrhagic colitis, hemolytic uremic syndrome and thrombotic thrombocytopenic purpura.

16. (canceled)

17. (currently amended) ~~A method of treating a subject having an infection of an Stx-producing organism, comprising~~ The method of claim 1, wherein administering to the subject a therapeutically effective amount of hop bract tannin comprises:

selecting a hop bract tannin having an affinity for an Stx produced by the Stx-producing organism; and

administering the hop bract tannin to the subject enterically in an amount effective to alleviate a clinical presentation of the infection.

18. (original) The method of claim 17, wherein selecting comprises isolating hop bract tannin from a hop bract extract by affinity chromatography with a chromatographic matrix derivatized with the Stx.

19. (original) The method of claim 17, wherein selecting comprises obtaining a high molecular weight fraction of a hop bract extract.

20. (original) The method of claim 19, wherein the high molecular weight fraction has a weight-average molecular weight of 5 kDa or greater.

21. (original) The method of claim 17, wherein selecting comprises detecting a hop bract tannin component having an affinity for the Stx.

22. (currently amended) The method of claim 21, wherein detecting a component having an affinity for the Stx comprises detecting a signal generated by a biosensor, the biosensor having a hop bract tannin as ~~the~~ a bioreceptor portion of the biosensor.

23. (original) The method of claim 22 where the hop bract tannin is a polycatechin.

24. (original) The method of claim 23 where the polycatechin is between a 10-mer and a 30-mer polycatechin.

25. - 26. (canceled)

27. (original) The method of claim 17, wherein the clinical presentation of the infection is one or more of severe diarrhea, hemorrhagic colitis, hemolytic uremic syndrome and thrombotic thrombocytopenic purpura.

28. (canceled)

29. (original) A method for detecting the presence of an Stx in a biological sample, comprising:

contacting the biological sample with a hop bract tannin; and

detecting a macromolecular complex between the Stx and the hop bract tannin.

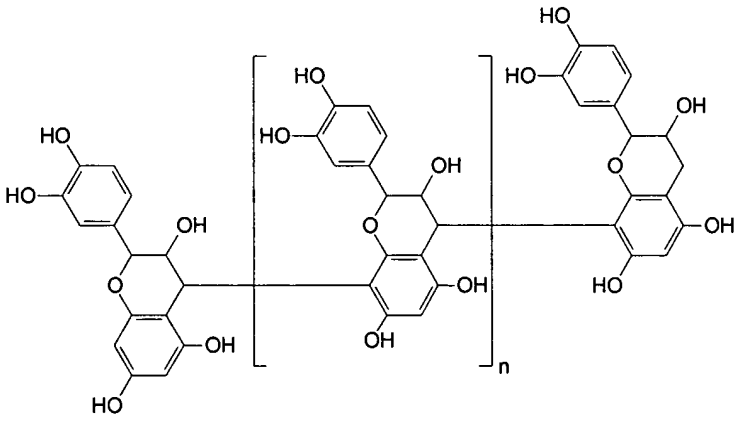
30. (original) The method of claim 29, wherein detecting comprises detecting a precipitate comprising the complex.

31. (original) The method of claim 29, wherein detecting the macromolecular complex between the hop bract tannin and the Stx comprises detecting an electrophoretic pattern associated with the presence of the macromolecular complex in the sample.

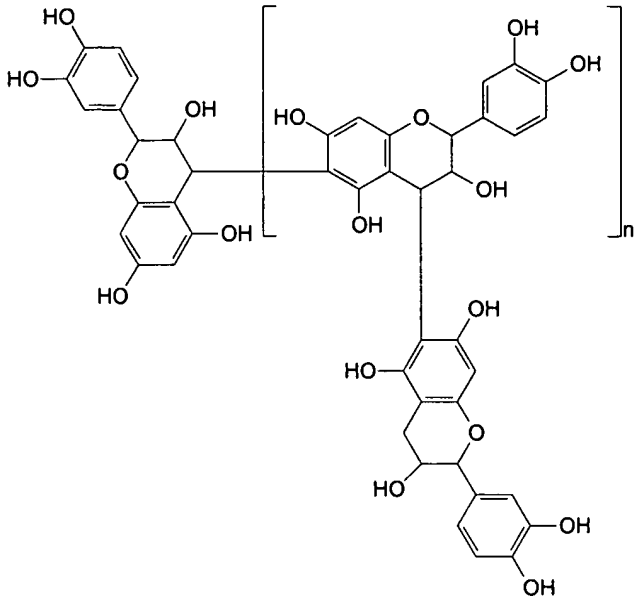
32. (original) The method of claim 29, wherein the hop bract tannin serves as a bioreceptor of a biosensor and detecting comprises measuring a change in a property of a transducer of the biosensor.

33. (original) The method of claim 29, wherein the hop bract tannin is a polycatechin between a 10-mer and a 30-mer.

34. (original) The method of claim 29, wherein the polycatechin has the forumla



where n = 8 to 28, or



where n = 8 to 28.

35. (original) The method of claim 29, wherein the hop bract tannin comprises a fraction isolated from a hop bract extract.

36. (original) The method of claim 35, wherein the fraction has a weight-average molecular mass between 5kDa and 30 kDa.

37. (currently amended) A method for isolating and purifying Stx-binding polyphenols, comprising:

contacting a mixture comprising [an]a Stx-binding polyphenolic compound isolated from *Humulus lupulus* with an Stx to form a macromolecular complex between the compound and the Stx;

isolating the macromolecular complex; and

separating the polyphenolic compound from the macromolecular complex to obtain a purified sample of the polyphenolic compound that binds Stx.

38. (original) The method of claim 37, wherein the Stx is coupled to an activated chromatographic matrix.

39. (original) The method of claim 37, wherein the Stx comprises he bioreceptor of a biosensor.

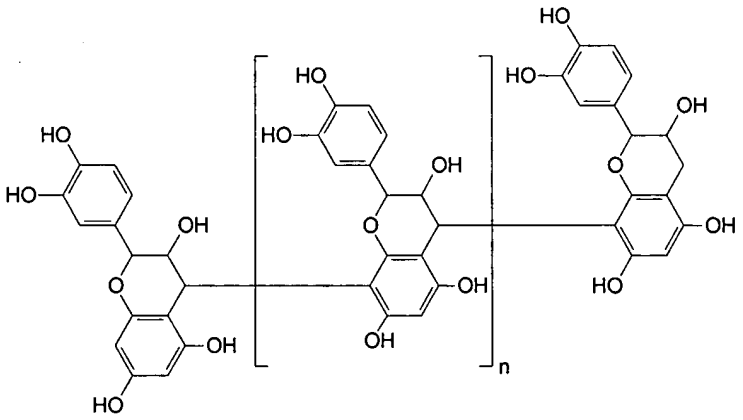
40. (original) The method of claim 38, wherein the Stx is Stx1.

41. (original) A method for prophylatic or post-exposure treatment of an inhaled Stx comprising administering a therapeutically effective amount of hop bract tannin intranasally to a subject.

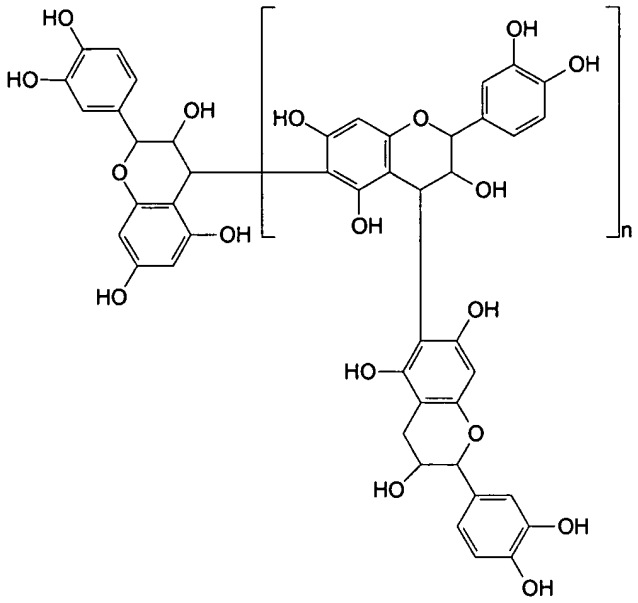
42. (original) A biosensor, comprising:
a hop bract tannin as a bioreceptor, and
a transducer.

43. (original) The biosensor of claim 42, wherein the hop bract tannin is a polycatechin between a 10-mer and a 30-mer.

44. (original) The method of claim 43, wherein the polycatechin has the forumla



where n = 8 to 28, or



where n = 8 to 28.

45. (original) The method of claim 42, wherein the hop bract tannin comprises a fraction isolated from a hop bract extract.

46. (original) The method of claim 45, wherein the fraction has a weight-average molecular mass between 5kDa and 30 kDa.

47.-57. (canceled)

58. (original) A method for neutralizing a bacterial toxin, comprising:
providing a hop bract tannin; and
contacting the bacterial toxin with the hop bract tannin to neutralize the toxin.

59. (original) The method of claim 58, wherein the bacterial toxin is selected from the group consisting of Shiga toxins and cholera toxins.

60. (original) The method of claim 58, wherein the hop bract tannin comprises a subfraction having a weight-average molecular weight from 5 kDa to 30 kDa.

61. (original) The method of claim 58, wherein the hop bract tannin comprises a polycatechin selected from the group of 10-mers to 30-mers, and mixtures thereof.

62. (original) An isolated polyphenolic component of a high molecular weight fraction of a hop bract extract, the high molecular weight fraction having a weight average molecular weight of greater than 5 kDa.

63. (original) A subfraction of a high molecular weight fraction of a hop bract extract, the high molecular weight fraction having a weight average molecular weight of greater than 5 kDa.

64. (original) The subfraction of claim 63, wherein the subfraction has a weight average molecular weight range selected from the group consisting of 5 kDa-30kDa, 5kDa-10kDa, 5kDa-8kDa, 8kDa-30kDa, 8kDa-10kDa and 10kDa-30kDa.